On board USS Constellation (CV 64) off Southern California, F/A-18 Hornets line flight deck prior to night flight operations.

Customer Focused Power Projection

Annual Report

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Annual Report

Naval Aviation Systems Team

1996

How Customers Measure

Our Success . . .

Superior Fleet Air Power

THE COMMANDER'S REPORT

It is my pleasure to report that the Naval Aviation Systems Team (TEAM) continued this year to make progress across its spectrum of responsibility. This Annual Report describes the progress we made, how we measured it, and what we are doing to ensure that similar progress continues in the years ahead.

Our TEAM exists to provide the United States Navy and Marine Corps with the technologically superior air power they need for their essential role in national defense. They are our customers. We execute five core processes on their behalf: Acquisition Management; Test and Evaluation; Repair/ Modification; In-Service Engineering; and the Advancement of Technology through focused Research and Development.

We listen to our customers; they tell us how well we are doing. The yardsticks they use are the ones most important to them: Recapitalization and Modernization of Fleet assets, maintenance of Readiness, and the Reductions we make in our Cost of Doing Business. Because these are the areas most important to our customers, they are the areas most important to us. Knowing the inevitability of customer reaction, we have put into place a system of metrics to measure our performance in these crucial areas. Customer response is the ultimate measure of how well we are doing our job. We have dedicated our focus entirely to customer satisfaction.

Our Focus Today and Tomorrow

We are a large corporation with technical and industrial facilities and detachments around the world. At the end of 1996, our personnel complement numbered 37,000 and we managed $15.1 billion during the year. In practice, we retain core capabilities in-house, but most of our work is done with private industry. In 1996, we executed 8,599 contract actions and awarded contracts in the amount of $6.5 billion. Our challenge in the coming year, and for several into the future, is to accommodate customer requirements with our shrinking resources. This can be done only by continuing to change the way we do business to stay ahead of an environment that is itself constantly changing. Thus far, we have restructured to focus on our core Competencies and assembled our very talented work force to support Integrated Program Teams.


VADM J. A. Lockard
Commander, Naval Air Systems Command

We intend to conduct Naval Aviation Acquisition and Support functions with sound business principles. To meet the requirements of the Government Performance and Results Act, (GPRA) we continuously review our strategic plan to ensure that it reflects our goals and describes measurable performance standards in support of our customers. We will produce annual reports documenting our progress toward those goals. This Annual Report is our first step in that direction.

In 1997, we will further sharpen our focus on customer needs, seek additional cost reductions, and increase corporate efficiency. The re-engineering of our TEAM as a corporate organization is well underway; and we remain committed to its successful completion.

- ***Further Reduce Operating Costs***
- ***Modernize Existing Systems***
- ***Recapitalize Fleet Aviation Assets***
- ***Maintain Affordable Readiness***

The TEAM's Contribution to National Defense

Throughout 1996 the mission of the Naval Aviation Systems Team remained unchanged. We continued to provide the Navy and Marine Corps with the systems they need for air power, and we kept each system in top operating condition.

The United States has vital interests around the world that must be protected as part of national security. Naval air power is crucial to our defense strategy, but air power is much more than aircraft by themselves. Air power needs ordnance that will neutralize targets, electronics for surveillance and communication, countermeasures to keep aircraft clear of the enemy's defenses, launching gear that puts the planes in the air, and landing equipment that gets them home again. But putting the equipment into place does not by itself create air power. Once there, it must be kept at peak operating efficiency. All systems are designed and built from the most advanced technology and kept at that level through continuous modernization, but the job does not stop there: equipment must be continually maintained and supply lines kept full.

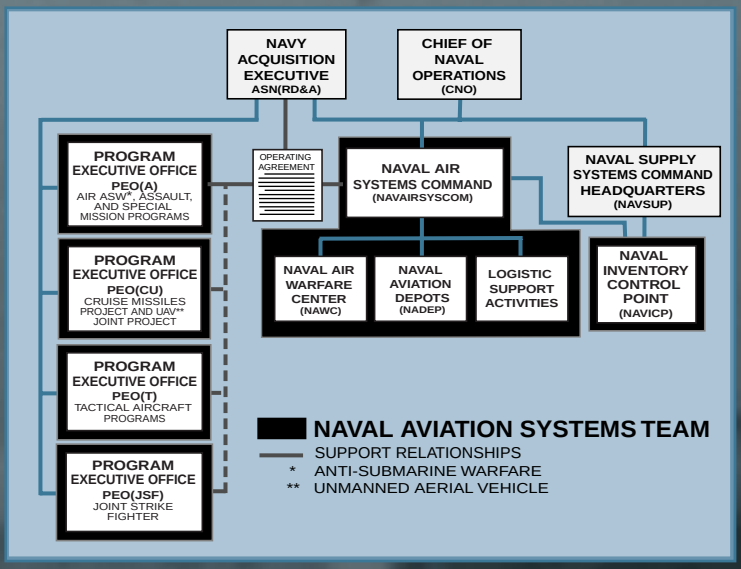
All of this is the responsibility of the Naval Aviation Systems Team. To meet our responsibility, we are shaped and sized to provide — with the resources and assets that we own — the air power the Navy and Marine Corps need to go in harm's way and defend the country they exist to serve. This is our contribution to national defense.

At Naval Air Systems Command (NAVAIRSYSCOM) we manage the total life cycle of all systems we provide. We begin with the technology base from which systems are researched, designed, developed, and engineered and acquire them from private industry. We test and evaluate them and furnish them to their users — our customers — along with the necessary training equipment. From then on we ensure the maintenance of these systems, modify them as needed, and ultimately dispose of them when they reach the end of their useful life.

The future of Naval air power is bright. The F/A-18E/F *Hornet*, the AV-8B *Harrier*, the AH-1W *Supercobra*, and the V-22 *Osprey* will be the tactical aircraft that take us into the 21st century. Beyond these systems, the Joint Strike Fighter — now in the research and development phase — will be the fixed-wing tactical aircraft of the Navy, Marine Corps, and U.S. Air Force.

The Naval Aviation Systems Team is composed of six elements of the Navy Department:

- ***Naval Air Systems Command***
- ***Program Executive Office, Air Anti-Submarine Warfare, Assault & Special Mission Programs (PEO(A))***
- ***Program Executive Office, Cruise Missiles Project and Unmanned Aerial Vehicle Joint Project (PEO(CU))***
- ***Program Executive Office, Tactical Aircraft Programs (PEO(T))***
- ***Program Executive Office, Joint Strike Fighter (PEO(JSF))***
- ***Naval Inventory Control Point, Philadelphia (NAVICP)***



The following is a partial list of the goods and services the TEAM provided to the seagoing forces in 1996 to help them get their job done:

90	New Aircraft	1,800	Systems of Air Combat Electronics
4,906	Guided Missiles	215	Global Positioning Systems Installed in Aircraft
370	Aerial Targets	53	Navy Aircrew Common Ejection Seats
258	Aircraft Overhauls	5,654	Aircrew Helmets
938	Engine Overhauls	15,849	Sonobuoys
109,095	Component Repairs	8,000	Mark 82 Bombs
8,599	Contract Actions	34,000	500 Pound BLU-111s Loaded with Explosives

Acquisition Programs

Here are our highest visibility acquisition programs. They are designed either to recapitalize or to modernize Navy or Marine Corps air power. Superior and affordable technology will give the United States armed forces the edge in combat. Each of the programs listed here provides that edge.

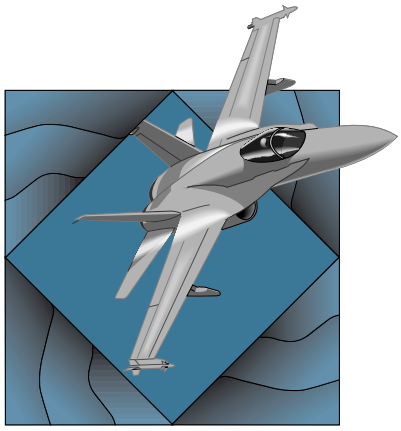
Program
AAR-47 Missile Warning System
Advanced Medium-Range Air-to-Air Missile (AMRAAM)
Advanced Strategic and Tactical Infrared Expendable
Advanced Tomahawk Weapons Control System (ATWCS)
Afloat Planning System (APS)
AGM-88 HARM Missile Block V
Air Deployable Active Receiver
AIM/RIM-7M Sparrow Product Improvement Program
AIM/RIM-7P Sparrow Block I/II
AIM/RIM-7R Sparrow Missile Homing Improvement Program
AIM-9X Sidewinder Missile
Airborne Command Post
ALE-47 Countermeasures Dispensing Set
ALE-50 Countermeasures Decoy Dispensing Set
ALQ-144 Infrared Countermeasures
ALQ-164 Tactical Aircraft Electronic Countermeasures Pod
ALQ-165 Airborne Self-Protection Jammer
ALR-67(V)2 Radar Warning Receiver

Program
ALR-67(V)3 Advanced Special Receiver
AN/APR-39(A)2
AN/ARC-182 Radio
AN/ARC-210 Radio
AN/SLQ-20 Upgrade
AV-8B Harrier Remanufacture
AVR-2 Laser Warning Device
Common Ejection Seat
Common Missile Warning System
Consolidated Automated Support System
EA-6B ALQ-99 Band 9/10
EA-6B ALQ-99 Low-Band Transmitter
E-2C Hawkeye Production
E-2C Hawkeye Mission Computer Upgrade
Extended Echo Ranging System
F-14 Tomcat Upgrade
F-14 Tomcat Precision Strike Program
F/A-18C/D Hornet

Aboard USS George Washington (CVN-73) F/A-18 Hornets line the flight deck at sundown in the Arabian Sea.

Program
F/A-18E/F Super Hornet
F/A-18 Hornet Advanced Targeting FLIR
APG-73 Radar Upgrade
F/A-18 Hornet Tactical Reconnaissance
Generic Expendable
H-1 Helicopter Upgrades
High Power Transmit System
Improved Tactical Air-Launched Decoy (ITALD)
Integrated Defensive Electronic Countermeasures
Joint Service Imagery Processing System-Navy (JSIPS-N)
Joint Air-to-Surface Standoff Missile
Joint Direct Attack Munitions
Joint Emitter Targeting System
Joint Primary Aircraft Training System
Joint Standoff Weapon Unitary
Joint Standoff Weapon Baseline
LAU-138 BOL Chaff Dispenser
LAMPS MK III Block II for the SH-60R Sea Hawk

Program
P-3 Orion Sustained Readiness Program
P-3 Orion Anti-Surface Warfare Improvement Program
Penguin (AGM-119)
Pioneer Unmanned Aerial Vehicle (UAV)
Radio Frequency Countermeasures
S-3 Viking Communications Control Group
SH-60B Sea Hawk Armed Helicopter Program
Shallow Water Attack and Localization Sensor
Standoff Land Attack Missile (SLAM)
Standoff Land Attack Missile-Expanded Response (SLAM-ER)
T45 Training System
TACAMO Block Upgrade Program
Tactical Aircraft Moving Map Capability
Theater Mission Planning Center (TMPC)
Tomahawk Cruise Missile (BGM-109)
Tomahawk Baseline Improvement Program (TBIP)
V-22 Osprey



RECAPITALIZATION

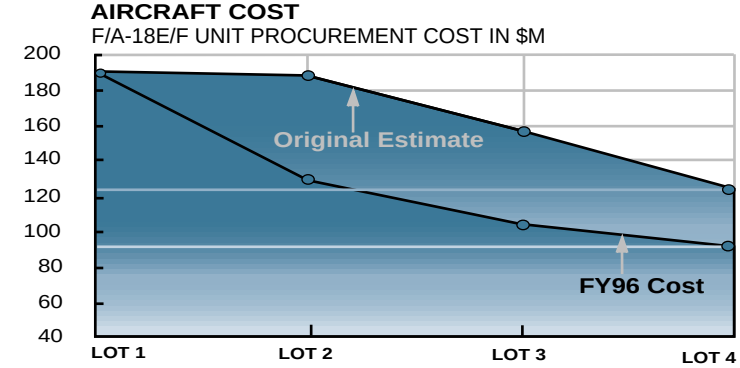
Measure of Success

To Recapitalize the Fleet's aviation assets, we plan to introduce three new aircraft: the F/A-18E/F *Hornet*, the Joint Strike Fighter (JSF), and the V-22 *Osprey*. Along with their derivatives they will give the Navy and Marine Corps the aviation capacity they need to meet and defeat the threats they will face far into the 21st century. In addition to aircraft, there will be the Joint Primary Aircraft Training System and new weapons such as the Joint Standoff Weapon System (JSOW) and the AIM-9X *Sidewinder*.

Joint Strike Fighter (JSF)

Formerly known as Joint Advanced Strike Technology (JAST), the JSF program is developing a family of next-generation tactical aircraft for the U.S. Navy, Marine Corps, and Air Force and the United Kingdom's Royal Navy. For the U.S. Navy, the highly survivable JSF will complement the F/A-18E/F. The Marine Corps will use it as a short takeoff vertical landing (STOVL) aircraft to replace the AV-8B and F/A-18A/C/D. The Air Force will acquire a multirole system with a primarily air-to-ground mission to complement the F-22 and replace the F-16 and A-10. The Royal Navy will use a STOVL variant to replace its Sea Harrier. The United Kingdom, a collaborative partner, will provide $200 million to the Concept Demonstration Phase of the program. Foreign participation is expected to increase.

The JSF Program's cornerstone is affordability — reducing the cost of development, production, and ownership. The program was structured from the beginning as a model of acquisition reform, emphasizing jointness, technology maturation and concept demonstrations, and early cost-performance trades integral to the weapon system requirements definition process. At year's end, JSF was poised to commence the Concept Demonstration Phase featuring competing contractors building and flying demonstrator aircraft.



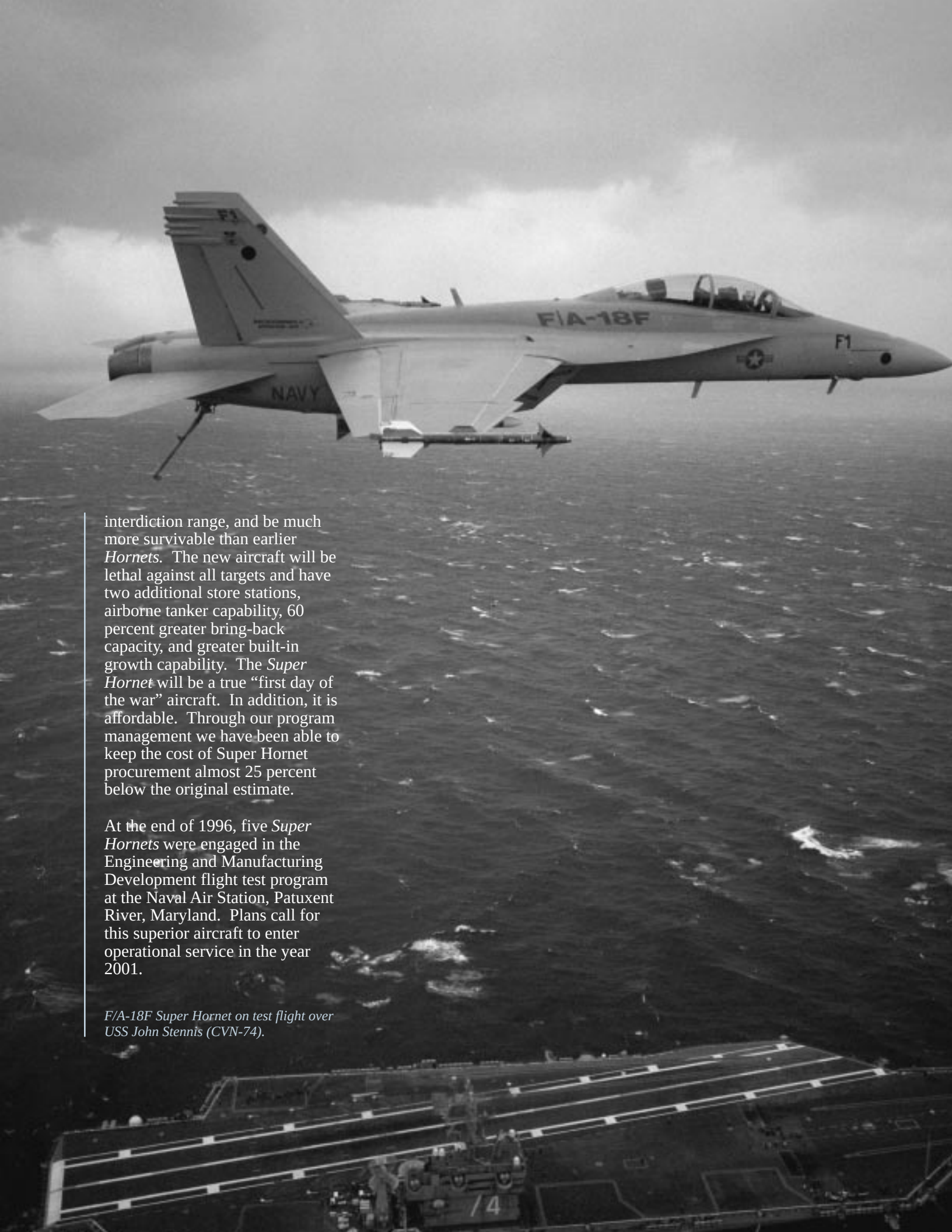
Recapitalization

Joint Standoff Weapon (JSOW)

A smart bomb now under development as a joint Navy and Air Force program, the JSOW will increase standoff distance of the launching aircraft thereby reducing hazard from enemy defenses. JSOW will also reduce the number of weapon types in inventory by incorporating the capabilities of five systems into one weapon family. Reduction in types will lower requirements for maintenance, supply, and storage, thus freeing assets and resources for other uses. In 1996, JSOW experienced 95 percent success in testing. All key parameters were demonstrated. Delivery of this valuable weapon to Fleet squadrons is planned for 1999.

F/A-18 Hornet

A critical element of our recapitalization plan, the F/A-18 *Hornet* has already replaced the A-6 *Intruder* attack plane, and when the F-14 *Tomcat* has left inventory, the *Hornet* will represent the Navy's carrier-based strike fighter capability. The Marines will continue to use the F/A-18C/D as their land-based fighter and to augment the attack capacity of their AV-8B *Harrier* and AH-1W *Supercobra*. Currently flying are the single-seat F/A-18A and F/A-18C and the dual-seat F/A-18B and F/A-18D. The new single-seat F/A-18E and dual seat F/A-18F *Super Hornets* will be larger, have 45 percent greater



interdiction range, and be much more survivable than earlier *Hornets.* The new aircraft will be lethal against all targets and have two additional store stations, airborne tanker capability, 60 percent greater bring-back capacity, and greater built-in growth capability. The *Super Hornet* will be a true "first day of the war" aircraft. In addition, it is affordable. Through our program management we have been able to keep the cost of Super Hornet procurement almost 25 percent below the original estimate.

At the end of 1996, five *Super Hornets* were engaged in the Engineering and Manufacturing Development flight test program at the Naval Air Station, Patuxent River, Maryland. Plans call for this superior aircraft to enter operational service in the year 2001.

F/A-18F Super Hornet on test flight over USS John Stennis (CVN-74).

V-22 Osprey

Essential to our recapitalization program, the V-22 *Osprey* will provide the Marine Corps with improved ship-based assault capacity for moving troops and equipment from ship to shore and over the battlefield. The V-22 will perform the medium-lift functions now provided by the CH-46E and the CH-53D. For the Navy, the *Osprey* will provide combat search and rescue along with logistic support. A multiservice aircraft, the V-22 is scheduled for use by the U.S. Special Operations Command for long-range operations. The program will enter the flight test phase of Engineering and Manufacturing Development at Patuxent River, Maryland in 1997. At the end of 1996, the first Low Rate Initial Production contract was underway.

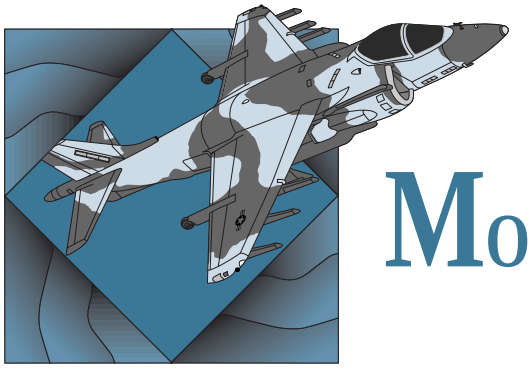
AIM-9X Sidewinder

This latest variant of the *Sidewinder* will take one of our oldest, and most reliable, air-to-air weapons into the 21st century. A joint Navy and Air Force program, the AIM-9X is designed to deploy on the F/A-18 *Hornet*, F-15E *Eagle*, F-16 *Fighting Falcon*, and F-22 aircraft. The AIM-9X will have full day and night capability, resistance to countermeasures, off-boresight acquisition, and launch capability increased over the existing *Sidewinder.* Maneuverability and target acquisition will be superior to any AIM-9 predecessor. Our current schedule is to begin Fleet deliveries early in the next century.

JPATS

The Joint Primary Aircraft Training System (JPATS) program was established to produce a replacement for the Navy's T-34C and the Air Force's T-37B training aircraft. JPATS is designed to be a common training system including an aircraft, academics, and simulators. The thrust of the program is to acquire a variant of an existing aircraft design and apply to it the maximum use of off-the-shelf components. In 1996, we awarded the program's engineering and manufacturing development contract for Raytheon Aircraft's Beech MK II aircraft.

V-22 Osprey (above)



MODERNIZATION

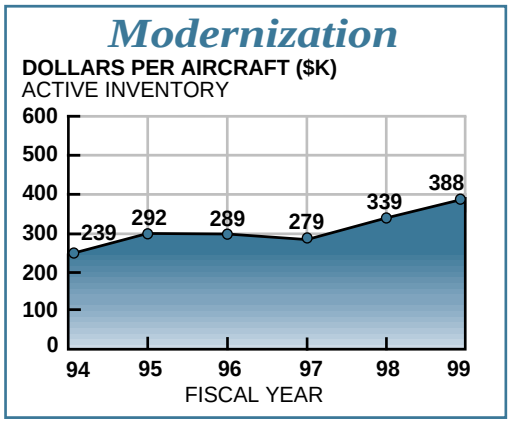
Measure of Success

Of the many systems we furnish to the naval forces and support once they are operational, virtually all of them possess the capacity for improvement. One of our yardsticks for success is how thoroughly we keep the Fleet's aviation systems up to date, or modernized, by adding new technology. Modernization relies on In-Service Engineering, which is one of the five core processes that we execute on behalf of our customers. As the chart to the right demonstrates, our cost reduction efforts are freeing up dollars for a significant increase in modernization spending. The following pages feature our leading modernization programs.

AV-8B Harrier

Aboard ship or operating from land, the Marine Corps' AV-8B *Harrier's* Vertical Short Takeoff and Landing (VSTOL) capability offers a basing flexibility indispensable during amphibious and littoral operations.

Throughout the year, we continued the *Harrier* II Plus program to produce a night attack aircraft equipped with the APG-65 radar. This improvement will enhance close air support in day, night, and all-weather operations. This variant of the *Harrier*, carrying up to 13,200 pounds of air-to-surface and air-to-air ordnance, gives the Marine Corps what they need to meet the threat of the early 21st century. Some *Harrier* II Plus aircraft are new production planes; others will be remanufactured from existing airframes. By the end of 1995 we had completed delivery of the new production aircraft, and during 1996 we delivered two more remanufactured aircraft.



EA-6B Prowler

The EA-6B Prowler, our premier electronic warfare aircraft, is an example of how modernization can keep existing systems ahead of the threat. In 1996, we continued with programs to upgrade the Prowler's capability. Three new EA-6B squadrons designed to support the joint Navy and Air Force electronic warfare mission stood up in 1996.

EA-6B Prowler (right)

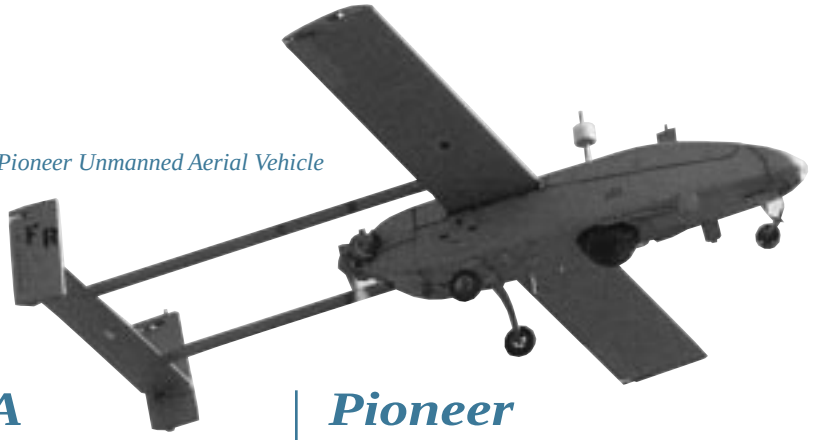
F-14 Tomcat

Still the world's premier long-range fighter, the Tomcat is no longer in production but remains in the Fleet with a strong modernization plan. During 1996, we deployed the first F-14 squadrons equipped with the LANTIRN system, which will provide a potent precision strike capability by laser guided bombs. We delivered fourteen F-14Bs with an upgrade that provides a digital architecture and new programmable display to permit weapons growth capability and high-resolution display to support precision guided ordnance. In addition to LANTIRN, we deployed this year the F-14 with night vision capability that will greatly enhance the Tomcat's war-fighting punch.

The Tomcat will continue to provide the Fleet's only manned tactical reconnaissance. In 1996 we deployed the first F-14 squadron equipped with new digital imaging and data link in tactical air reconnaissance pods. This capability provides battle group commanders with near-real-time imagery for detection and identification of targets and immediate threat and bomb damage assessment.

The Tomcat's critical role in maintaining air superiority and its ability to launch extensive precision guided ordnance at long range make it vital to the Fleet until the Super Hornet is available to take over the role.

An F-14 Tomcat lands on the nuclear-powered aircraft carrier USS Theodore Roosevelt (CVN-71) during Operation Deny Flight in the Adriatic Sea.



Pioneer Unmanned Aerial Vehicle

AH-1W Supercobra

The Marine Corps' AH-1W *Supercobra* gunship operating from both ship and land provides close air support, armed escort, fire support coordination, and reconnaissance. The *Supercobra's* Night Targeting System enables it to be a potent weapon day or night, in adverse weather, and under other low-visibility conditions. Armed with a 20-millimeter cannon, a variety of air-to-surface and air-to-air guided missiles, rockets, gun pods, bombs, and counter-measures, this versatile weapon system can take on both aircraft and armor. In 1996, we delivered 17 AH-1Ws to the Marine Corps, along with 34 Night Targeting Systems. We received approval to proceed to Engineering & Manufacturing Development with our H-1 Upgrades Program to increase agility, speed, and payload while decreasing pilot workload and increasing situational awareness with an integrated cockpit.

EP-3E Aries II

The EP-3E *Aries II* provides vital enhancement of the Fleet's electronic warfare capability. In 1996, the *Aries II* planned Sensor System Improvement Program won approval to enter production.

ES-3A Shadow

A modification of the S-3 *Viking* airframe, the ES-3A *Shadow* meets a critical electronic warfare requirement in the Fleet. In 1996, the Shadow's planned Critical Avionics Upgrade gained approval to enter production.

AH-1W Supercobra (below)

Pioneer Unmanned Aerial Vehicle

In 1996, the Pioneer Unmanned Aerial Vehicle completed 10 years of service with more than 14,000 flight hours. Also in 1996, Pioneer participated in Operation Joint Endeavor in support of Task Force Eagle in Bosnia. During the year we accepted 30 new Pioneer Air Vehicles for Fleet delivery.

P-3C Orion

In 1996 we began production of kits to improve the anti-surface warfare capability of the P-3C Orion. This versatile aircraft also provides anti-submarine warfare, command communication, battle group support, and airborne mining.

P-3C Orion (above).

S-3 Viking

Long out of production, but the S-3 Viking continues to provide multi-mission, warfighting support to the battle group commander. Although an essential carrier-based anti-submarine warfare platform, the Viking's roles in littoral surveillance and anti-surface warfare have recently undergone critical enhancements. In 1996, the VS-22 Checkmates squadron were upgraded in preparation for deploying as the Fleet's first AGM-65 Maverick capable S-3B squadron. Additionally in 1996, the carrier-based Viking's planned Critical Avionics Upgrade gained approval to enter production.

S-3 Viking (above).

E-6A Mercury

SH-60B (above).

T-45 Goshawk in flight (above).

E-6A Mercury

The E-6A Mercury continues to provide a crucial link between national command authority and strategic forces during times of international crises. During 1996, we received approval to enter production with the Mercury's avionics block upgrade, high power transmit set, and orbit improvement system.

SH-60B

During 1996, we delivered the last new production SH-60B aircraft. We also delivered 15 existing SH-60Bs equipped with the Block I Upgrade, an improvement package greatly enhancing this ASW aircraft's capabilities.

T-45 Goshawk

The T-45 *Goshawk* is our newest undergraduate jet trainer, part of the T45TS Naval Undergraduate Training System which includes flight simulators, an academics package, and a computer based integration system. In 1996, we delivered nine new *Goshawks* into service and won approval for its newly developed digital cockpit.

Two workhorses for the Fleet Marine Force, the H-46 Sea Knight (forward) and the CH-53E Super Stallion.

H-46 Sea Knight

One of the Marine Corps' most enduring systems, the aging H-46 *Sea Knight* (above forward) has been essential to the Fleet Marine Force for over thirty years and still ably fills its mission as a vital element in medium lift capacity and vertical replenishment.

CH-53E Super Stallion

Another Marine Corps workhorse, the CH-53E *Super Stallion* (above background) remains indispensable to the Fleet's assault and heavy-lift capacity. During 1996, we delivered six new production CH-53Es into service.

E-2C Hawkeye

E-2C Hawkeye

The carrier-based E-2C Hawkeye Airborne Early Warning aircraft gives the Fleet a great advantage against over-the-horizon threats. In 1996 we completed installation of Satellite Communication capabilities in all Fleet Hawkeyes.

TAMPS

The Tactical Aircraft Mission Planning System (TAMPS) gives military planners the electronic ability to handle multiple data bases and process large quantities of digital data before selecting the most effective tactical option. Once selected, this option gives aircrews the optimum approach to gaining access to the theater of engagement, placing ordnance on target, and egressing the area. In 1996, we completed a rigorous review of operational requirements to improve the interface between humans and machines in future software upgrades. Subsequently, we upgraded the TAMPS user interface software. We delivered 70 new TAMPS to our Navy and Marine Corps fleet customers.

Flight Safety Improvements

Safety will always be among any aviator's greatest concerns. The expense of human life, the cost of equipment and training, and the international importance of our mission place the issue of safety high on everyone's priority list.

We continue to place special emphasis on two major areas. The first is installation of Ground Proximity Warning Systems, Flight Data Recorders, and other equipment that reduces risk of loss. Secondly we are focused on improving contractor flight operations and contracting procedures.

Conventional Ordnance

While guided ordnance is essential to today's war fighter, iron bombs and unguided rockets remain indispensable. During 1996 we delivered to the Fleet 260,000 pyrotechnic cartridges and escape rocket motors, 12,000 2.75 inch rockets, 8,000 MK 82 iron bombs, and we completed loading the explosive charge in 34,000 five hundred pound BLU-111 iron bombs.

Guided Missiles

Tomahawk

Among the most potent weapons in the national arsenal, the Tomahawk cruise missile is one of our leading products. During the year we delivered 216 new Block III Tomahawks to the Fleet. We restructured the Tomahawk Baseline Improvement Engineering & Manufacturing Development to accommodate fleet requirements. We also conducted the successful deployment of the Afloat Planning System and the Joint Service Imaging Processing System-Navy with the USS George Washington (CVN-73) Battle Group.

AIM-120 AMRAAM

Our newest air-launched guided missile, the Advanced Medium-Range Air-to-Air Missile (AMRAAM) is a joint program of the Navy and Air Force. The AIM-120 is an air intercept missile for the 21st century. In 1996 we delivered 75 AIM-120s to the Fleet. The AIM-120C received clearance to be operated from the F/A-18C/D. The first in-field reprogramming of the AMRAAM was accomplished during the year. And we initiated an enhancement to the missile's rocket motor.

Tomahawk Cruise Missile launches from Ticonderoga Class cruiser.

AGM-84E SLAM ER

A derivative of the AGM-84 Harpoon missile, the Standoff Land Attack Missile (SLAM) is an air-launched precision weapon designed for fixed, high value targets ashore. Since the beginning of 1996, Fleet firing exercises have clearly demonstrated that squadrons are improving their proficiency with the missile. The introduction of automated SLAM mission planning into our Tactical Aircraft Mission Planning System (TAMPS) has decreased mission planning time to under 30 minutes. SLAM is now is being upgraded to the Expanded Response (SLAM ER) configuration which has planar wings, a reactive case titanium warhead, a multi-channel integrated Global Positioning System/Inertial Navigation System and mission computer with new operational flight software incorporating man-machine interface improvements and automatic target acquisition. These improvements will allow man-in-the-loop control or autonomous precision strikes from outside 150 nautical miles; they will double warhead lethality and reduce operating costs. The initial free flight of SLAM ER was expected in 1997 along with a decision for the missile to enter initial production.

AGM-114 Hellfire II

Launched by the Marines from their AH-1W *Supercobra* gunship, the AGM-114 projects precision accurate strike power against tanks, structures, bunkers, and helicopters. During 1996 we delivered 1,100 *Hellfire II* missiles to the Marines.

AGM-88 HARM

The air-to-surface High-Speed, Anti-Radiation Missile (HARM) is designed to home on an enemy's radar and destroy it. Used by both Navy and Air Force, HARM is critical to suppression of enemy air defenses. During 1996 we completed the functional design for an improvement program providing HARM with greater effectiveness and Home-On-Jam capability.

BGM-71 TOW

The Tube-launched, Optically tracked, Wire-guided (TOW) missile remains one of the deadliest anti-armor weapons at our disposal. It has been in use by the Marines since 1979 and is launched by both land-based and ship-based helicopters. During 1996 we delivered 3,600 TOW-2A missiles for use by ship-based helicopters.

Vital Services

Science and Technology

The advancement of science, technology, research, and development is one of the five core processes we execute on behalf of our customers. We are responsible for the science and technology (S&T) base from which naval aviation systems are researched and developed. We maintain full membership on the Office of Naval Research Science and Technology Advisory Board to foster a coherent, sound, and effective naval aviation S&T program.

Every year, we undertake new programs and pursue existing ones that continue to show potential. The items listed below are representative of our S&T and R&D programs during 1996. Each addressed the unique nature of Navy and Marine Corps aviation and the extreme environment in which our systems operate.

- Demonstrated image-based situational awareness software on the F/A-18 Hornet simulator
- Demonstrated a new real-time operating system for the AV-8B Harrier mission computer
- Tested a new thin film sensor for detection of corrosion
- Implemented fiber placement process for F/A-18 Hornet and V-22 Osprey composite structures manufacturing process
- Continued development of a jam resistant adaptive data link to eliminate the F/A-18 Hornet weapons control pod
- During the year, we signed 44 cooperative agreements with private industry saving the Team around $1.4 million

Training

The TEAM is responsible for the full spectrum of Navy and Marine Corps training systems from simulators to live weapons ranges. As life cycle manager for training systems, our Training Systems Program Office supported by the Training Systems Division in Orlando, Florida makes the TEAM a world leader in the R&D and production of training devices for the United States and many foreign nations. We focus on systems designed with High Level Architecture and common software language that give our customers a superior capability while allowing affordable maintenance and upgrades.

In 1996 our major deliveries to the Fleet included: two SH-2G Flight Instrument Trainers, six TOPSCENE Mission Rehearsal Systems, three Mission Avionics Systems Trainers for the EP-3 and ES-3 aircraft, 26 Countermeasure Training Aids, two TC-18F trainer aircraft for E-6A training, a CH-53 COMNAV Instrumentation Trainer, a Control Display and Navigation Unit Trainer and Computer-Based Trainers for the H-1 Block Upgrade, an E-2C Group II Weapons System Trainer and Maintenance Trainer, and 216 Captive and Dummy Launched Training Missiles. We made major

upgrades to the S-3 Weapons System Trainer and two Flight Trainers and three Maintenance Trainers for the EA-6B.

We relocated three Fleet Replacement Squadrons according to decisions by the Base Realignment and Closure Commission (BRAC). We completed the Development Test training and training interactive courseware for JSOW, Night Vision Curricula and Equipment for 15 sites, Interactive Multi-sensor Analysis Trainer acoustic hardware for enlisted avionics school, interactive courseware for Strike Fighter Weapons School, and we executed 40 training efficiency and effectiveness reviews for the Chief of Naval Education and Training. In acquisition reform we finished converting the principal Military Standard for training devices to a Military Performance Specification.

Test and Evaluation

The TEAM is recognized as a world leader in all areas of aviation T&E. Our main T&E facilities are located at Patuxent River, Maryland and at China Lake and Pt. Mugu, California. We operate test ranges in both the Atlantic and Pacific oceans. The following items are representative of our T&E work during 1996.

Testing of the F/A-18 E/F included initial demonstration of transonic and supersonic flight, aerial refueling from the KC-130, catapult launches, catapult steam ingestion, arrested landings, jet blast deflector compatibility, electromagnetic compatibility evaluation, AN/ALE-50 towed decoy deployment, and aircraft signature measurement. The F-14D began the Digital Flight Control System production flight test program to demonstrate enhancements in departure resistance and approach flying qualities. The LANTIRN Targeting System was integrated with the F-14A/B for fleet use. Tests on the V-22 included risk reduction flights. The P-3C's ASW Improvement Program completed contractor ground and flight testing and began it's Follow-On Test and Evaluation phase.

Avionics upgrade tests included integrating Global Positioning Systems on the F/A-18C/D, the F-14B precision strike capability, and the H-46 Communication/Navigation Control System. Weapons evaluations included a mission planning module for the AGM-84E, qualification testing of JSOW, and captive flight tests of the AIM-9X. The AGM-85E SLAM was integrated with the P-3C, and the AGM-65 Maverick was installed in seven P-3C and four S-3 aircraft.

A fully integrated two-way linkage was demonstrated between the Manned Flight Simulator at the Air Combat Environment Test and Evaluation Facility and the Atlantic Range Real-time Telemetry Processing System. This allowed initial conditions in a simulation to be continually updated by live data. The Pacific range conducted technical evaluation of the *Sea Sparrow* RIM-7A. Additional range initiatives included integration with training ranges.

Electronic Warfare

Among the most critical arenas of modern combat is electronic warfare. As the electronic capabilities of potential adversaries continue to grow, the Fleet's requirement for more sophisticated EW technology will remain crucial. We have met, and will continue to meet, this requirement. In 1996, we delivered 1,800 systems of combat electronics to fleet squadrons.

Sonobuoys and Sensors

The United States Navy demonstrated the practical use of the subsurface sonobuoy during the Second World War. Since then, development of the air-launched sonobuoy, and a variety of sensors, has been among our leading priorities. As the nature of anti-submarine warfare continues to change, it remains our responsibility to ensure that the Fleet has the sonobuoys and sensors necessary to meet any potential threat. During 1996 we continued the development of improved equipment and delivered 15,849 sonobuoys for operational use.

Supply Support

The Naval Inventory Control Point, Philadelphia (NAVICP) continued to improve support of readiness while adjusting to inventory reductions of $468 million. At the end of 1996, our deployed aircraft carriers were reporting record low off-ship requisitions. The amount of supply material available had improved from a year earlier and back orders were lower. Process improvements led to reduced contract lead times, and requisitions for aged piece parts in support of repair fell by 50 percent. Indispensable to the TEAM, NAVICP is always an example of what can be achieved with sound business practices and consistent good management.

Crew Systems

We furnish everything used by Navy and Marine Corps aircrews. During 1996 we delivered, among other equipment, 5,654 aircrew helmets and 53 Navy Aircrew Common Ejection Seats.

Aviation Support Equipment

Our Consolidated Automated Support System (CASS) provides the Fleet with the capacity to test electronic equipment both ashore or aboard ship. In 1996, a highly successful Follow-on Operational Test & Evaluation recommended CASS for continued introduction to fleet service. During the year, CASS demonstrated 96 percent availability support of the F-14D *Tomcat* at sea. Also in 1996, we delivered into service 52 CASS stations and 276 items of aviation support equipment.

Industrial Production

Our Naval Aviation Depots remain the core of our industrial competency. They conduct much of the repair and modification which is one of the core processes we execute for our customers. During 1996, we completed the divestiture of excess facilities and equipment. We continued outsourcing non-core work while maximizing the use of organic resources. The reduced infrastructure is proving itself capable of providing quality support to our customers while lowering overhead as a more efficient organization.

This year we entered into partnerships with private industry to help us with cost reduction by consolidating functions, sharing lessons learned, and developing common business practices. Our use of organic capacity is now near optimum.

Each airframe and engine type is now overhauled only at the depot dedicated to that type; realignment is proceeding toward product and technology specific operations. These realignments are increasing economies and efficiencies, improving productivity, and enhancing customer satisfaction. By grouping our technological excellence we have created a unique knowledge and skill base enabling us to maintain fleet readiness while achieving the lowest life-cycle operating costs. These cost control measures will pay dividends for many years to come as we realize a return on our investment in workloads, equipment, and our most precious resource — highly skilled and motivated personnel.

In 1996, we closed the Depots at Norfolk, Virginia and Alameda, California. We completed work on 258 aircraft, 938 engines, and 109,095 components. Overall Depot overhead to total cost ratio decreased from 0.37 to 0.34 between 1995 and 1996. Initiatives were taken to improve cost and performance across all product lines including validation of work performed during rework, reduction of cycle time, improved material forecasting, and analysis of Reliability Centered Maintenance. Reliability Centered Maintenance has the potential to improve the material condition of all aircraft while reducing depot repair hours, overall depot costs, and time of systems out-of-service.

The Depot Component Program produced some significant cost and performance improvements. Each of the three remaining Depots showed improved average cost variance and turnaround time in 90 percent and 70 percent respectively of their product lines. Fifteen out of the 25 different engine repair programs showed improved average cost variance with improved turnaround time for 11 of the programs. Actual versus planned costs were less for the AV-8B *Harrier*, E-2C *Hawkeye*, C-2A *Greyhound*, and EA-6B *Prowler* programs and turn-around-time for the *Harrier*, F/A-18 *Hornet* and the P-3C *Orion* dropped significantly. Improvements initiated thus far remain consistent with our goal to reduce cost of ownership; they are expected to yield even more favorable results in 1997.

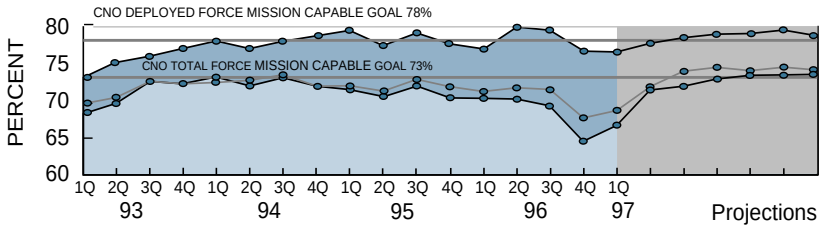
During the year, the Navy Calibration Laboratories excessed over 1,300 Calibration Standards with a cost avoidance of over $475,000. They achieved a reduction in turnaround time for depot level fleet calibration support from a average of 7.5 days to 6.6 days, a 12 percent improvement exceeding the NAVAIRSYSCOM goal of 14 days by over 50 percent. The laboratories provided over 105,000 hours of depot-level calibration services to the fleet, totaling over 27,000 items.

AFFORDABLE READINESS

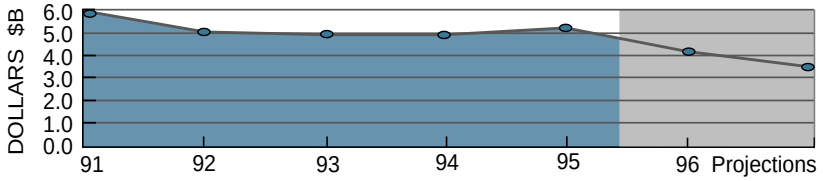
Measure of Success

Of the major yardsticks we use to measure our success, it can fairly be said that readiness is the ultimate test of everything we do. Readiness is essential to the war-fighters' ability to prevail against a determined enemy. It relies on science and technology, research and development, test and evaluation, acquisition, modernization, logistics, maintenance, and supply support. Our job is to make sure the equipment the Fleet has at hand is enough to do the job. If personnel are trained and proficient, and their equipment is sufficient and ready, then the Fleet itself is mission capable.

Readiness Trend – Mission Capable



Major Maintenance Costs



However, in the current fiscal environment we can no longer afford readiness at any cost. Our new paradigm must be based at a level of acceptable readiness that we can afford. It will be best achieved by applying the procurement and support principles we have come to know as Affordable Readiness.

The four components of Affordable Readiness are Flexible Sustainment, Right Sourcing, Total Cost of Ownership, and Sustained Maintenance Planning. These four concepts, when applied across the life cycle of a weapons system, will provide the program manager with the capabilities necessary to sustain the program at the lowest total cost.

Used in concert, the components of Affordable Readiness provide managers with a powerful tool that can lead us to informed, logical decisions regarding system supportability. These processes enable us to make the smart tradeoffs necessary to drive down costs in such areas as reliability and organic support structure, to name only two examples. Affordable Readiness concepts will enable us to procure and sustain the systems the Fleet requires.

We are aggressively applying these concepts to decisions regarding our four major cost drivers: inventory, manpower, technical data, and infrastructure. Our goal is to reduce life cycle cost. We can measure the effectiveness of our Affordable Readiness efforts by monitoring these cost drivers and their trends. Above all, we cannot let safety be breached in the name of Affordable Readiness, and we will remain vigilant against such an occurrence.

We have asked our Fleet Support Teams to develop Affordable Readiness Implementation Plans, to set specific reduction targets, and to establish metrics measuring their levels of success. With these metrics we continue to refine and update our Affordable Readiness concepts.

Reducing Costs

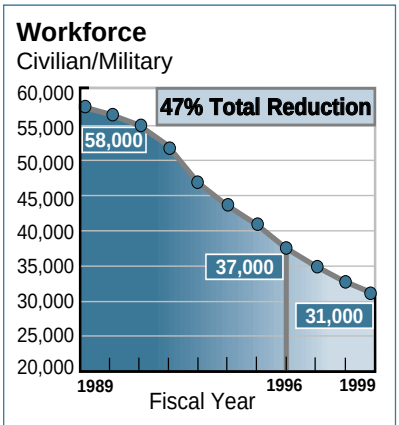
Measure of Success

The last of the four major yardsticks we use to measure our success is our ability to reduce the acquisition and support costs of Naval aviation. The major approaches we take include reform of the acquisition process, reduction of workforce numbers, and reduction of the number of sites we need to operate and maintain.

Through the Base Realignment and Closure process we have consolidated functions, lowered the number of employees, and closed facilities. By the turn of the century, we will have gone from an organization of 57,526 military and civilian employees at 18 sites in the late 1980s to 31,107 employees at only 8 sites. These changes represent great financial savings but they have confronted us with the serious challenge of absorbing the impact of fewer assets while maintaining our core capabilities and retaining the quality workforce and proper skills mix that we need to get our job done.

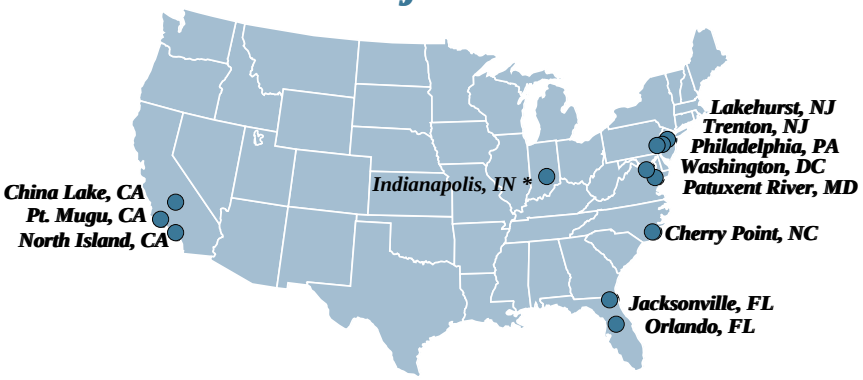
The past few years have demanded creative thinking and a willingness to adapt to change while being mindful of the personal impact on each member of our workforce. Since downsizing began in the late 1980s, we have offered separation incentives, discontinued service retirement, and alternative employment for displaced employees whenever possible.

We offer classes on relocation procedures, resume preparation, buying and selling real estate, and small business development. We have placed the highest priority on the needs of the individual, and learned that our priorities could not have been better arranged.



Reducing the Workforce

TEAM Major Sites FY96



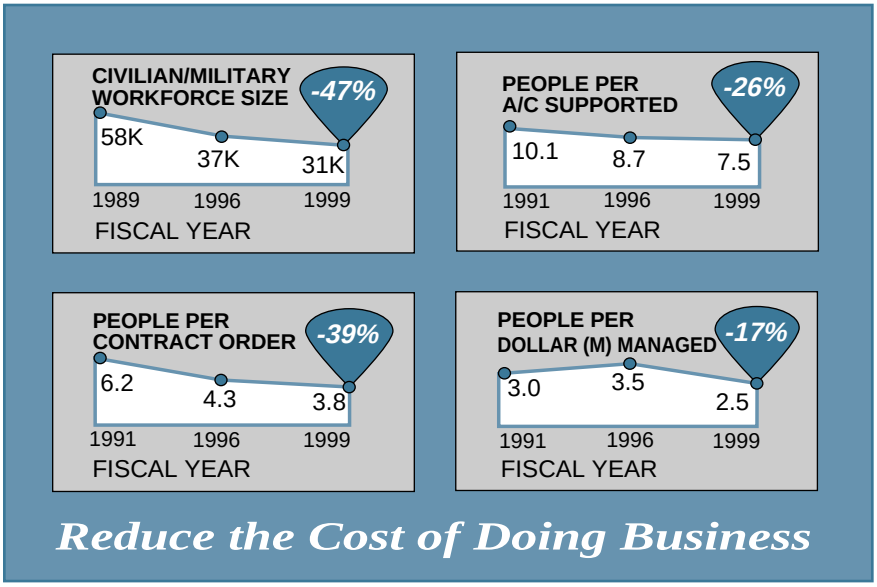
* *Indianapolis Privatization: Cease Mission Date March 15, 1997*

Acquisition Changes

Another effective approach to cost reduction, which we have only begun to exploit, is to change some of our acquisition procedures. By strengthening our partnership with industry, and using the advantages offered by procurement regulations, we bring our resources closer to accommodating requirements. Among the most promising tools in this area are the Innovative Support Strategy and the Commercial Support Package.

Innovative Support Strategy

An example of what can be done with the Innovative Support Strategy is the ARC-210 airborne radio. By using the Reliability Incentivized warranty we expanded reliability from 500 to 1,100 hours over a 5-year contract. We have guaranteed the contractor sole source production and all the commercial depot work. In return, we get a guaranteed unit price and a contractor guarantee of reliability and delivery. When we compare the ARC-210 Innovative Support Strategy with the old standard approach, we find a reduction of 70 percent in flight hour maintenance costs over the 5 years of the contract. This represents a total program savings of $27 million in acquisition costs and another $38 million in support cost avoidance.



Commercial Support Packages

Our Commercial Support Packages have also paid off. They provide yet another example of the dividends to be gained through our Government/industry partnerships. Commercial Support Packages led to cost reduction and expedited technology insertion which is essential to effective system enhancement. Money for new procurement is scarce and will remain scarce. It is through modification — or modernization — that we will gain much of the future system improvements that our customers are going to need. Any method that appears to offer the potential to expedite modernization deserves a closer look.

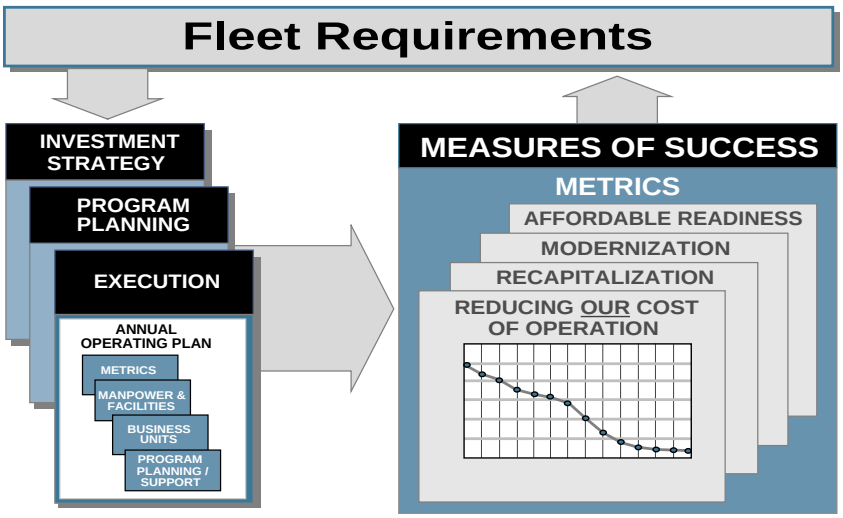
Outsourcing

We are all conducting several Commercial Activities studies. These were initiated as part of a larger Navy effort to determine the feasibility and economy of converting to the private sector various support functions now performed in-house. The Commercial Activities studies are among several efforts underway across the Navy to reduce costs and free up funds for recapitalization and modernization. Along with the rest of the Navy, we are using the A-76 Commercial Activities program to conduct the studies. At the end of 1996 all final decisions remained to be made. Outsourcing is understandably a controversial and emotional issue. Nonetheless, it offers costs reduction and will have to be considered.

BUSINESS OPERATIONS

On October 2, 1995, the Dow Jones Industrial Average stood at 4761.26. On September 30, 1996, it stood at 5882.17, a 23.5 percent increase that demonstrates the enduring success of our free enterprise system. The return on money invested in the Dow Jones Industrial stocks is easily calculated, but the return on investment in national security is intangible and impossible to measure in dollar amounts. Nonetheless, we of the armed forces have a responsibility to provide the taxpayers with information demonstrating that their money is well spent by those entrusted with it.

The Government Performance and Results Act (GPRA) of 1993 requires that all agencies of the Federal Government create a form of self-management that will produce measurable results that improve the agency's products and services — improvement that can be demonstrated as clearly as the improvement in the Dow Jones Industrial Average without resort to smoke and mirrors. The GPRA mandates that all agencies begin, by September 30, 1997, to prepare strategic plans that will cover at least 5 years and can be updated every 3 years. The strategic plan is the ultimate set of metrics because it declares what the agency's structure and condition will be at the end of the following 5 years. Beginning in the year 2000, each agency will prepare its first annual performance plan. The performance plans will explain annually how the agency will move closer in the coming year to achieving the broad goals set forth in the strategic plan. Also in the year 2000, each agency will prepare its first performance report. While the performance plan projects a year ahead, the performance report will describe an agency's actual achievements during the year past.



Managing Naval Aviation as a Business

This Annual Report for the Naval Aviation Systems Team for 1996 is largely a performance report describing our major achievements of the year past and detailing how we will measure achievements in the years ahead. Planning executing, and metrics will form the foundation of our future operations.

Business Operating Structure

Early in fiscal year 1996, the Naval Aviation Systems Team published its Business Operating Guide. This marked the beginning of the implementation phase of our Business Operating Structure. The Guide documented for the first time the operating concepts used in conducting business in the

Integrated Program Team/ Competency Aligned Organization (IPT/CAO). The transition of the Team to a fully integrated IPT/CAO, a process that began in 1994, is scheduled for completion in 1998. To be successful, the transition required a Business Operating Structure consistent with the organization's structure. The Business Operating Guide describes the necessary structure and builds upon existing business systems while moving the Team to a new operating approach that is more dependent on market forces and has a greater product orientation.

Our Business Operating Structure is based on what our organization simply is: a product-focused organization driven by customer requirements emphasizing management that is suitable for a private sector organization. The structure involves a systems approach that includes four phases: Planning, Budgeting, Allocation and Distribution, and Execution.

Annual Operating Plan

The Business Operating Guide provides the operating concepts needed to conduct the Team's business within the IPT/CAO structure. In 1996 the Team began the implementation phase of the Business Operating Structure. The Annual Operating Plan (AOP) is written as a management tool and is now being deployed as a first step in this implementation. It is an automated, easy-to-use management tool for regularly monitoring planning data versus actual data, and augmented by analysis and narrative. The AOP provides senior managers with detailed information on a set of commonly formatted metrics.

International Programs

Our international programs represent a vital part of the Naval Aviation Systems Team's total corporate responsibilities. In 1996 our Foreign Military Sales, (FMS) which are the largest of our International Programs, were valued at $28.7 billion and represented over half the FMS for the entire Department of the Navy. Besides FMS programs, we continued to pursue other efforts such as the Department of Defense's Foreign Comparative Test program that looks for items developed abroad and capable of meeting our own defense requirements. Such items frequently provide us with necessary equipment while saving us the expense of research and development.

Health of Naval Aviation

Our Health of Naval Aviation Office (HONA) continued to provide us with an easily accessible data base with all elements to analyze the cost to develop, acquire, and support our aviation systems. The HONA program is a vital element in our drive to contain and reduce expenses and to develop Naval aviation's long-range vision. Its data base is an integral part of the procurement planning process and gives us a central focus for planning, allocating, and justifying resources.

By introducing on-line viewing, and expanding data base sharing within the Navy, we have enhanced communications with our resource sponsors and improved productivity within our TEAM work force. In 1996, we updated our HONA software programming to provide a long-range planning system that furnishes senior staff macro affordability and force analysis in support of fact-based decision making.

Measure of Success

We are dedicated to improving the products and services that we offer our customers. We will stand or fall on how well we make good on that promise. We know what is most important to them. They are the ones who risk their lives to make good on their commitment to national security, and they rely on what we provide. We can tolerate nothing but the best being at hand for them when they need it.

In this Annual Report we identified areas of greatest importance to our customers and described how we measure our response to their requirements. The degree of customer satisfaction is the degree of our success.

Naval Aviation Systems Team
Annual Report 1996

Wm. J. Armstrong,
Editor & Information

Michael Carr,
Layout & Design

Lieutenant Chris Madden
Chief Journalist Rick Toppings
Navy Chief of Information,
News Photo Division
Photographs

Thanks to all members of the TEAM who contributed expertise and many hours of time to make this document possible.